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Shree Damodar College of Commerce & Economics, Margao-Goa
Post-Graduate Department of Commerce (M.Com)
M.Com Part-II, Semester-III, Semester End Examination, November 2023
COM-601: Basic Econometrics (OA - 35)

Duration: 2 Hours

Max Marks: 40

Instructions:

1. *This paper consists of Six questions carrying Equal marks.*
2. *Question No.1 consists of 5 Compulsory questions of 2 marks each.*
3. *Answer any Three questions from questions 2,3,4,5 and 6*
4. *Each question carries 10 marks. Figures to the right indicate marks.*

Q.1. Write short notes on the following:

(10)

- a) Gauss Markov Theorem
- b) Goodness of Fit
- c) Model Mis-specification
- d) Dummy variable Trap
- e) Stochastic Process

Q.2. A. How do researchers select an appropriate econometric model for a specific economic problem? Explain with an example.

(08)

B. Describe the Property of Minimum Variance in OLS Estimation.

(02)

Q.3. Discuss the assumption of constant error variance in econometrics. Highlight the causes, detection methods, and potential consequences of varying error variance on statistical analysis and discuss briefly how econometricians typically address this problem in their models?

(10)

Q.4. A. Explain with suitable examples the ANOVA and ANCOVA Model and state the significance of using such models in Cross-sectional analysis.

(05)

B. Consider the following regression results:

$$UN_t = 2.7491 + 1.1507 D_t - 1.5294 V_t - 0.8511(D_t V_t)$$

[Where, UN_t = Unemployment Rate (%), V_t = Vacancy Rate (%), $D_t = 1$, for period from 1996 and = 0, for period before 1996, t = time in years]

Predictors	Coefficient	Prob
Const	2.7491	0.0002
D_t	1.1507	0.0405
V_t	- 1.5294	0.0011
$D_t V_t$	- 0.8511	0.1301
R^2	0.9128	

- Formulate the Null Hypothesis for the above case.
- Interpret the type of relationship between Unemployment and Vacancy rates?
- Is the average unemployment rate significantly different during the period before and after 1996? Justify your answer.
- Are vacancy rates significantly different for the period after 1996 compared to the period before 1996? Justify your answer. (05)

Q.5. A. Define the concept of Stationarity with the help of a graph. Differentiate a stationary time series from a non-stationary time series. (04)

B. Explain with the help of examples the different types of models used for Estimating an ARIMA Model. (06)

Q.6. A. A regression analysis was conducted on a sample of 30 smartphone prices (in Rupees) and their storage capacity (in gigabytes). The following computer output was obtained. Study the output and answer the questions below: (05)

Predictor	Coefficient	Std. Deviation	T	P-value
Constant	63.40	10.24	6.19	0.000
Storage Capacity	4.80	0.76	4.31	0.000
R-Sq = 0.755				
R-Sq (adj) = 0.748				

- i. Describe the variables used in the analysis.
- ii. What type of relationship do the variables portray?
- iii. Formulate the Null and Alternate Hypothesis.
- iv. Calculate and interpret a 95% confidence interval for the true slope of the regression line. (Consider Tabulated t-value at 28 degrees of freedom at 5% to be 2.048). Based on Confidence interval calculated, what would be the result of a test for the significance of the regression at the 5% level? Explain.

B. How does the presence of serial correlation impact the validity of the stochastic error term assumption? State any two measures used for correcting the model from the underlying problem of serial-correlation. (05)

*****Best Wishes*****